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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,909	11/13/2001	Masao Segawa	216095US2S	6633

22850 7590 01/26/2007
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

DANIELS, ANTHONY J

ART UNIT	PAPER NUMBER
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2622

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/986,909

Applicant(s)

SEGAWA ET AL.

Examiner

Anthony J. Daniels

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) ~~1-13~~^{1-2 and 4-13} is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) ~~1-13~~^{1-2 and 4-13} is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment, filed 10/30/2006, has been entered and made of record. Claims 1,2 and 4-13 are pending in the application.

Response to Arguments

2. Applicant's arguments regarding the newly amended independent claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2622

3. Claims 1,4,6,9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa (US 2003/0025824) in view of the Japanese Publication to Ogata (JP05-275201) and further in view of Johnson (US # 5,861,654).

As to claim 1, Ishikawa teaches an image pickup apparatus (Figure 1) comprising: a first connector arranged on a wiring board (Figure 1, position defining member "3"; *{As seen in Figure 1, the position defining member is located on the printed circuit board "6".}*); a second connector including an optical lens and being engageable with the first connector (Figure 1, optical image pickup system including positioning projections "11"; *{Positioning projections are part of the image pickup optical system "2".}*); a photoelectric conversion module (Figure 1, package "1") including a photoelectric conversion element (Figure 1, solid-state image pickup element "9") which has an electrode located on an optical lens side (Figure 1, electrode portions "4" on lens side of printed circuit board "6") and on which light from the optical lens is incident (Figure 1), said photoelectric conversion module being fixedly held when the photoelectric conversion module is clamped by the first and second connectors in a state where the first and second connectors are in engagement and coupled relatively to each other (Figure 1, positioning projections of optical system engaged in positioning holes "10"); and a positioning member (Figure 1, positioning projections "11") determining relative positions of the first connector, second connector and photoelectric conversion module ([0006]); and an electrode electrically connected to a terminal of the photoelectric conversion module (Figure 1, electrode portions "4") and located at a position where the first connector is in contact with the photoelectric conversion module (Figure 1), said electrode being electrically connected to the wiring board (Figure 1, electrode portions "4" connected to printed circuit board "6"). The claim differs from Ishikawa

Art Unit: 2622

in that it further requires that the electrode be a spring electrode and that the positioning members have at least two different shapes.

In the same field of endeavor, Ogata teaches a connection terminal for a chip component on a circuit board (see Purpose). The connection terminal comprising a springy electrode connected to the chip component on the circuit board (Purpose). In light of the teaching of Ogata, it would have been obvious to one of ordinary skill in the art to include the connection method of Ogata in the solid-state image pickup element of Ishikawa, because an artisan of ordinary skill in the art would recognize that such a connection terminal would prevent damage to the circuit board if chip replacement is required resulting in quality improvement (see Ogata, Constitution, Lines 9-12).

In the same field of endeavor, Johnson teaches an image sensor assembly having a lens unit (Figure 6, lens "62") and image sensor (Figure 2, image sensing device "12"). The assembly comprises a mounting plate (Figure 6, mounting plate "64"), connected to the lens unit (Figure 6), having three reference locators (Figure 6, reference locators "68a-c"). Two of the reference locators are cylindrically shaped with a square locator pins at the top (Figure 6, locator pins "70a, b"). The other is cylindrically shaped with no square locator at the top (Figure 6, reference locator "68c"; Col. 4, Lines 30-55). In light of the teaching of Johnson, it would have been obvious to one of ordinary skill in the art to include the reference locators in the assembly of the Ishikawa, because an artisan of ordinary skill in the art would recognize that these would allow for proper alignment and fastening of the image sensor to the lens unit (see Johnson, Col. 4, Lines 45-55).

As to claim 4, Ishikawa, as modified by Ogata and Johnson, teaches an image pickup apparatus according to claim 1, wherein said second connector includes a lens barrel (see Ishikawa, Figure 1, optical image pickup system; *{A lens barrel is inherent in the optical image pickup system of Ishikawa.}*).

As to claim 6, Ishikawa, as modified by Ogata and Johnson, teaches an image pickup apparatus according to claim 1, wherein said first connector includes a guide which guides the second connector to a predetermined position (see Ishikawa, Figure 1, positioning holes "10" of position defining member "3" (first connector)).

As to claim 9, Ishikawa, as modified by Ogata and Johnson, teaches a portable electric apparatus comprising the image pickup apparatus defined in claim 1 (see Ishikawa, [0002], "...video camera or a digital camera...").

As to claim 10, Ishikawa, as modified by Ogata and Johnson, teaches an image pickup apparatus according to claim 1, wherein said positioning member is a pin connected to said second connector (see Johnson, Figure 1, reference locators "68a-c" are interpreted as the pins), and wherein said first connector has an opening part configured to receive said pin (see Ishikawa, Figure 1, positioning holes "10").

4. Claims 1,10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanamori et al. (US # 5,153,734) in view of the Japanese Publication (JP05-275201) and further in view of Johnson (US # 5,861,654).

As to claim 1, Kanamori et al. teaches an image pickup apparatus (Figure 12) comprising:

Art Unit: 2622

a first connector arranged on a wiring board (Figure 12, CCD reference plate “16”); a second connector including an optical lens and being engageable with the first connector (Figure 12, optical low pass filter holder “29” and lens barrel (not shown – see Kanamori et al., Figures 2 and 3; Col. 3, Lines 60-64)); a photoelectric conversion module including a photoelectric conversion element on which light from the optical lens is incident (Figure 12, CCD “10”), said photoelectric conversion module being fixedly held when the photoelectric conversion module is clamped by the first and second connectors in a state where the first and second connectors are in engagement and coupled relatively to each other (Figure 12). The claim differs from Kanamori et al. in that it further requires an electrode located on an optical lens side and a spring electrode electrically connected to a terminal of the photoelectric conversion module and located at a position where the first connector is in contact with the photoelectric conversion module, said electrode being electrically connected to the wiring board and a positioning member determining relative positions of the first connector, the second connector and photoelectric conversion module having at least two different shapes.

In the same field of endeavor, Ogata teaches a connection terminal for a chip component on a circuit board (see Purpose). The connection terminal comprising a springy electrode connected to the chip component on the circuit board (Purpose). In light of the teaching of Ogata, it would have been obvious to one of ordinary skill in the art to include the connection method of Ogata in the CCD of Kanamori et al., because an artisan of ordinary skill in the art would recognize that such a connection terminal would prevent damage to the circuit board if chip replacement is required resulting in quality improvement (see Ogata, Constitution, Lines 9-12).

Note about rejection of claim 1 above (Kanamori et al. in view of Ogata): This combination puts the connection terminal of Ogata in a position within the low pass filter holder member "29". This provides an electrode on the optical lens side of the base plate "19" and located at a position where the first connector is in contact with the photoelectric conversion module.

In the same field of endeavor, Johnson teaches an image sensor assembly having a lens unit (Figure 6, lens "62") and image sensor (Figure 2, image sensing device "12"). The assembly comprises a mounting plate (Figure 6, mounting plate "64"), connected to the lens unit (Figure 6), having three reference locators (Figure 6, reference locators "68a-c"). Two of the reference locators are cylindrically shaped with a square locator pins at the top (Figure 6, locator pins "70a, b"). The other is cylindrically shaped with no square locator at the top (Figure 6, reference locator "68c"; Col. 4, Lines 30-55). In light of the teaching of Johnson, it would have been obvious to one of ordinary skill in the art to include the reference locators in the assembly of the Kanamori et al., because an artisan of ordinary skill in the art would recognize that these would allow for proper alignment and fastening of the image sensor to the lens unit (see Johnson, Col. 4, Lines 45-55) and further obviates the need to use screws for fastening.

As to claim 10, Kanamori et al., as modified by Ogata and Johnson, teaches an image pickup apparatus according to claim 1, wherein said positioning member is a pin connected to said second connector (see Johnson, Figure 1, reference locators "68a-c" are interpreted as the pins), and wherein said first connector has an opening part configured to receive said pin (see Johnson, Figure 2, "30a-c").

As to claim 11, Kanamori et al., as modified by Ogata and Johnson, teaches an image pickup apparatus according to claim 10, wherein said photoelectric conversion module has a hole configured to allow passage of said pin therethrough (see Johnson, Figure 2, "30a-c").

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa (US 2003/0025824) in view of the Japanese Publication to Ogata (JP05-275201) in view of Johnson (US # 5,861,654) and further in view of Tamura et al. (US # 5,130,804).

As to claim 2, Ishikawa, as modified by Ogata and Johnson, teaches a second wiring board including an opening (Figure 1, shield "12" having two parallel sides with opening between those sides); transparent member provided for a major surface of the wiring board and covering both the opening and a photoelectric conversion surface (see Ishikawa, Figure 1, optical image pickup system "2"). The claim differs from Ishikawa, as modified by Ogata, in that it further requires that the photoelectric conversion element provide for a major surface different from that provided for by the transparent member and requires a photoelectric conversion surface that opposes the opening.

In the same field of endeavor, Tamura et al. teaches a wiring board holding camera components (Figure 1). In those components, there exists a lens barrel and CCD element on two opposing sides of the wiring board (Figure 1, CCD "17" and lens barrel "18") and there further exists an opening between the lens barrel and CCD (Figure 1, opening "35"). In light of the teaching of Tamura et al., it would have been obvious to include the CCD and lens barrel at opposing sides of the printed circuit board of Ishikawa, because an artisan of ordinary skill in the

Art Unit: 2622

art would recognize that this would provide a more compact apparatus (see Tamura et al., Col. 2, Lines 50-57).

Notes about rejection of claim 2: This combination puts the solid-state image pickup element “9” within the shield “12” and below the printed circuit board “6”. This makes the pickup element oppose the opening and this locates the pickup element at one major surface of the wiring board (inside) where the lens barrel is outside.

6. Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa (US 2003/0025824) in view of the Japanese Publication to Ogata (JP05-275201) in view of Johnson (US # 5,861,654) and further in view of Takachi (US 2003/0137595).

As to claim 5, Ishikawa, as modified by Ogata and Johnson, teaches an image pickup apparatus according to claim 1, wherein said second connector includes a lens barrel (see Ishikawa, Figure 1, optical image pickup system; {*A lens barrel is inherent in the optical image pickup system of Ishikawa.*}), said lens barrel has at least one opening which opposes the optical lens (see Ishikawa, Figure 1, opening in middle of optical image pickup system “2”). The claim differs from Ishikawa, as modified by Ogata and Johnson, in that it further requires that the lens barrel have a diaphragm.

In the same field of endeavor, Takachi teaches an image pickup device including a lens barrel having a diaphragm within it (Figure 2, diaphragm “12”). In light of the teaching of Takachi, it would have been obvious to one of ordinary skill in the art to include a diaphragm in the lens barrel of Ishikawa, because an artisan of ordinary skill in the art would recognize that this would provide an effective means to control the amount of light entering the image sensor.

As to claim 7, Ishikawa, as modified by Takachi, teaches an image pickup apparatus according to claim 1. The claim differs from Ishikawa, as modified by Takachi, in that it further requires that said first connector include an elastic member urging the second connector toward the first connector when the first and second connectors are brought into engagement and coupled relatively to each other.

In the same field of endeavor, Takachi teaches an image pickup device including engagement claws and an elastic O-ring; the O-ring acting as a biasing member biasing the optical elements towards the sensor package ([0038]). In light of the teaching of Takachi, it would have been obvious to one of ordinary skill in the art to include the engagement claws and O-ring Takachi in the system of Ishikawa, because an artisan of ordinary skill in the art would recognize that this would provide stable support for the CCD and optical image pickup system of Ishikawa.

7. Claims 8,12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanamori et al. (US # 5,153,734) in view of the Japanese Publication of Ogata (JP05-275201) and further in view of Johnson (US # 5,861,654).

As to claim 8, Kanamori et al. teaches a method for manufacturing an image pickup apparatus (Figure 12), comprising: an installation step of arranging a first connector (Figure 12, CCD reference plate "16") and an electronic component (Figure 12, CCD "10") on a wiring board (Figure 12, base plate "19"; *{Soldering is done on base plate "19" – see Col. 5, Lines 49 and 50.}*) and electrically connecting the first connector and the electronic component together (Col. 5, Lines 44-50; *{It is inherent that some sort of electric connection exists between the CCD*

Art Unit: 2622

reference plate and the CCD.})); and an assembly step performed when the first connector and a second connector are brought into engagement (Figure 12, optical low pass filter holder “29” and lens barrel (not shown – see Kanamori et al., Figures 2 and 3; Col. 3, Lines 60-64) are together the second connector), and including; inserting a photoelectric conversion module, including a photoelectric conversion (Figure 12, CCD “10”). The claim differs from Kanamori et al. in that it further requires an electrode located on an optical lens side and a spring electrode electrically connected to a terminal of the photoelectric conversion module and located at a position where the first connector is in contact with the photoelectric conversion module, said electrode being electrically connected to the wiring board and a positioning member determining relative positions of the first connector, the second connector and photoelectric conversion module having at least two different shapes.

In the same field of endeavor, Ogata teaches a connection terminal for a chip component on a circuit board (see Purpose). The connection terminal comprising a springy electrode connected to the chip component on the circuit board (Purpose). In light of the teaching of Ogata, it would have been obvious to one of ordinary skill in the art to include the connection method of Ogata in the CCD of Kanamori et al., because an artisan of ordinary skill in the art would recognize that such a connection terminal would prevent damage to the circuit board if chip replacement is required resulting in quality improvement (see Ogata, Constitution, Lines 9-12).

Note about rejection of claim 1 above (Kanamori et al. in view of Ogata): This combination puts the connection terminal of Ogata in a position within the low pass filter holder member “29”. This provides an electrode on the optical lens side of the base plate “19” and located at a position where the first connector is in contact with the photoelectric conversion module.

In the same field of endeavor, Johnson teaches an image sensor assembly having a lens unit (Figure 6, lens “62”) and image sensor (Figure 2, image sensing device “12”). The assembly comprises a mounting plate (Figure 6, mounting plate “64”), connected to the lens unit (Figure 6), having three reference locators (Figure 6, reference locators “68a-c”). Two of the reference locators are cylindrically shaped with a square locator pins at the top (Figure 6, locator pins “70a, b”). The other is cylindrically shaped with no square locator at the top (Figure 6, reference locator “68c”; Col. 4, Lines 30-55). In light of the teaching of Johnson, it would have been obvious to one of ordinary skill in the art to include the reference locators in the assembly of the Kanamori et al., because an artisan of ordinary skill in the art would recognize that these would allow for proper alignment and fastening of the image sensor to the lens unit (see Johnson, Col. 4, Lines 45-55) and further obviates the need to use screws for fastening.

As to claim 12, Kanamori et al., as modified by Ogata and Johnson, teaches a method of manufacturing an image pickup apparatus according to claim 8, wherein said positioning member is a pin connected to said second connector (see Johnson, Figure 1, reference locators “68a-c” are interpreted as the pins), and wherein said first connector has an opening part configured to receive said pin (see Johnson, Figure 2, “30a-c”).

As to claim 13, Kanamori et al., as modified by Ogata and Johnson, teaches a method of manufacturing an image pickup apparatus according to claim 12, wherein said photoelectric conversion module has a hole configured to allow passage of said pin therethrough (see Johnson, Figure 2, “30a-c”).

Conclusion

Art Unit: 2622

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J. Daniels whose telephone number is (571) 272-7362. The examiner can normally be reached on 8:00 A.M. - 5:30 P.M..

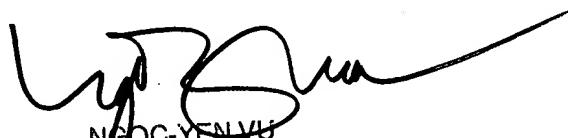
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2622

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AD

1/11/2007



NGOC-YEN VU
SUPERVISORY PATENT EXAMINER